ABSTRACT

An ultra-low noise, high gain interface pixel amplifier is provided with capability for single-photon readout of standard photodetectors at high electrical bandwidths for diverse spectral bandpass from the x-ray to long IR bands. The detector charge modulates a source follower whose output is double sampled to remove correlated noise by a compact stage that also provides optimum level shift for subsequent amplification of the full signal excursion. The level-shifted signal finally drives a compact amplifier that generates a robust end-to-end transimpedance. Single-photon readout of photodetectors at high electrical bandwidths in small pixel areas is thereby facilitated.